

**CANADA**  
**DEPARTMENT OF MINES AND RESOURCES**  
HON. T. A. CRERAR, MINISTER; CHARLES CAMSELL, DEPUTY MINISTER  

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**NATIONAL MUSEUM OF CANADA**  

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**BULLETIN No. 89**

**Annual Report of the National Museum  
for the Fiscal Year 1936-37**

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OTTAWA  
J. O. PATENAUDE, I.S.O.  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1937

*Price, 25 cents*













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**MINES AND GEOLOGY BRANCH**  
JOHN McLEISH, DIRECTOR  
**NATIONAL MUSEUM OF CANADA**  
F. C. C. LYNCH, IN CHARGE  
WYATT MALCOLM, ASSISTANT CURATOR

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## GENERAL ACTIVITIES OF THE NATIONAL MUSEUM OF CANADA

*By Wyatt Malcolm, Assistant Curator*

The last two years have been years of progress for the National Museum of Canada, and field investigations have been resumed and vigorously pursued. During the summer of 1936 field parties were engaged in biological work on the Pacific coast; in ornithological investigations in northern Manitoba; in a special biological survey of Thelon Game Sanctuary; a botanical survey of a section of country in the vicinity of Port Arthur, Ontario; botanical observations in the Arctic; collecting material in Algonquin park, Ontario, for a beaver habitat group; archæological excavations near Windsor, Ontario; archæological work in the Arctic; a study of early French-Canadian art and handicrafts; and the effect of contact with the white man upon Indian culture. Much material has been added to the collections and results of much interest to science have been obtained.

Twelve bulletins have been issued, of which two are annual reports, three are biological, two palæontological, and five anthropological.

The exhibition halls are undergoing marked changes. The cases in the Anthropological hall have been rearranged to form alcoves and the exhibits have been grouped in such a manner as to illustrate completely the physical, social, and religious life and the art and culture of the various groups of Indians. This rearrangement of the anthropological exhibits will be followed by a new arrangement in other halls and a strengthening of the exhibitional work for purposes of popular education.

The lecture hall has been enlarged by removing the partitions temporarily installed to create offices. Seating facilities have been increased and new projection equipment installed. The walls have been treated to improve acoustics and the whole hall, as well as the rotunda, has been redecorated.

A renewed interest in the welfare of the National Museum is being manifested by the public. In May 1936 the formal presentation of the large wood buffalo habitat group was made by Mr. Harry Snyder at an evening meeting presided over by the Honourable T. A. Crerar. Among the outstanding donations made during the year are: a very fine mounted specimen of Bighorn sheep taken by Alexander Fraser of Pittsburgh, Pennsylvania, on Grizzly creek, Alberta, and presented by him to the Museum<sup>1</sup>; a remarkably good ceinture fléchée presented by Mrs. George Major of Ottawa, and the head of a Pleistocene bison presented by Mr. Fenley Hunter. For these the officials of the Museum tender their most cordial thanks.

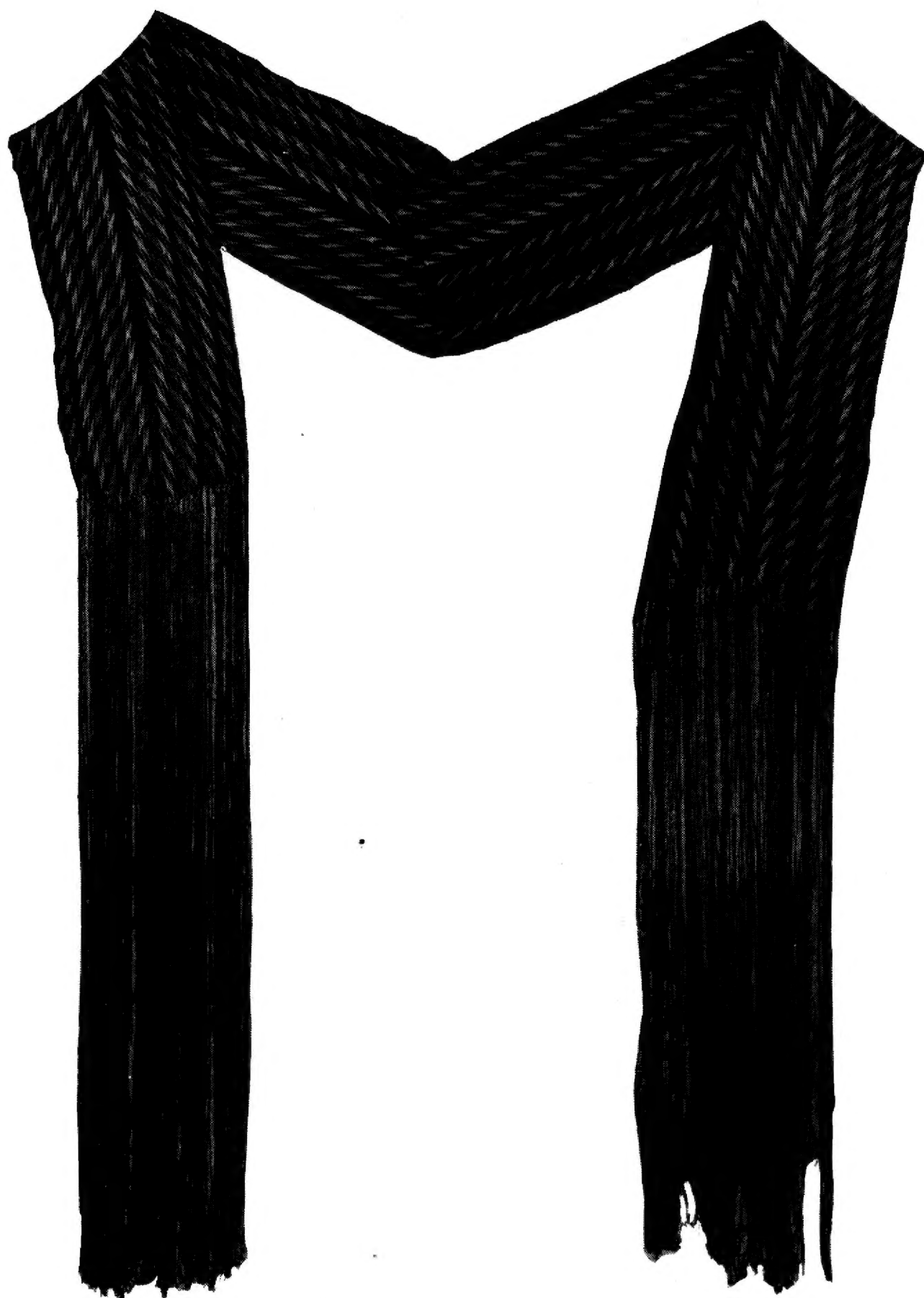
Sincere appreciation is also expressed for the most generous act of Mr. and Mrs. Fenley Hunter of Flushing, Long Island, who spent several weeks during the summer of 1936 with the assistance of the noted collector, Albert C. Silberling, in collecting mammalian fossil remains in southern Saskatchewan, and presented the entire collection to the National Museum.

<sup>1</sup> Described by A. Fraser in *Rod and Gun*, March 1937.  
45029—1½



Bighorn sheep, presented by Alexander Fraser, Pittsburgh, Pa.





Ceinture fléchée, presented by Mrs. George Major, Ottawa, Ontario.

Grateful acknowledgment is made to all those who contributed to the success of the two series of lectures, an account of which is given under "Educational Work." The National Museum is indebted to many institutions and persons who have rendered assistance and made presentations, and is particularly grateful for the unfailing gracious co-operation of the Royal Canadian Mounted Police and the National Parks Bureau.

Two long service members of the staff, Harlan I. Smith, Archæologist, and C. H. Young, Collector Preparator Specialist, have been retired on superannuation. Mr. Smith, in addition to carrying on his archæological research and maintaining complete records, was ardent in promoting the educational work of the museum and it is due to his enthusiasm that the autumn and winter lecture series for children and adults have become established functions of the institution. Mr. Young was an expert in certain types of museum technique and an indefatigable worker in the field and office. He was perhaps surpassed by none in collecting and preparing micro-lepidoptera, and was the discoverer of a great many species new to science. The administration hereby conveys to these men its appreciation of the services rendered.

A. E. Porsild, botanist, was transferred from the Department of the Interior to the National Museum at the beginning of the year; and in the reorganization of the department on December 1, 1936, F. C. C. Lynch was placed in charge of the National Museum under the Director of the Mines and Geology Branch of the Department of Mines and Resources, Wyatt Malcolm was appointed Assistant Curator of the Museum, Diamond Jenness was appointed Chief of the Anthropological Division, and P. A. Taverner Chief of the Ornithological Division.

## EDUCATIONAL WORK

This phase of museum work has also shown expansion. It reaches persons and organizations all over Canada, and is one of the most valuable services that can be rendered by a museum in bringing accurate and specialized knowledge on natural history and related subjects to many who could not otherwise obtain it.

### MOVING PICTURES

A number of films, mainly on biological subjects, were added to the motion picture library. They were purchased or were taken by members of the Museum staff. These films, besides being used in lectures and other activities of the Museum, are lent to schools, scientific societies, and other organizations interested in natural history. Except for costs of transportation no charge is made. A catalogue of motion pictures is provided for inquirers.

### LANTERN SLIDES

Sets of lantern slides on natural history subjects, mostly coloured, are being added to regularly, and may be obtained on the same terms as the motion picture films.



## PHOTOGRAPHS AND MINERALS

A large collection of photographs have been taken by officers of the National Museum and Bureau of Geology and Topography and furnish a basis for the Museum's services to the public. Many of these photographs are selected by museum officials and supplied to teachers, scientists, and authors. Collections and separate specimens of minerals and rocks are sold to schools and prospectors at moderate prices by the Bureau of Geology and Topography.

## MUSEUM LECTURES

Owing to alterations and additions to the Lecture Hall, only one series of lectures, on the life of the aborigines, geography and travel, geology, and other sciences, was given under the auspices of the National Museum. The Lecture Committee, consisting of M. E. Wilson (Chairman), C. L. Patch, G. C. Monture, and Miss M. Godwin (Secretary), reports that the series was most successful. Owing to the increasing popularity of the lectures, one additional lecture was given at the end of the regular course. As in previous years, the lectures were given on Saturdays at 10 a.m. and 11 a.m. for children, and on Wednesday evenings for adults. Appropriate moving pictures were also shown. For the loan of films the Museum wishes to express its gratitude to the Canadian Government Motion Picture Bureau, National Parks Bureau, Cunard-White Star Line (Montreal), American Museum of Natural History (New York), United States Bureau of Mines, United States Department of Agriculture, and the Bell Telephone Company of Canada.

The assistance of the Canadian Boy Scouts Association (Ottawa district) in acting as ushers in the Lecture Hall during the children's lectures has been greatly appreciated by the committee.

Particular acknowledgment is made of the co-operation of the local newspapers in generously providing space for reports and other news of the various lectures.

Following is a list of the lectures:

- Motion Pictures: Black Beauty, Our Caribbean Cousins, Bugville Romance, Around the World in Song.
- The Vimy Memorial, by M. F. Goudge, B.A., B.Sc., Engineer, Bureau of Mines, Department of Mines and Resources, Ottawa.
- Backstage in a Museum, by C. L. Patch, Chief Taxidermist and Herpetologist, National Museum of Canada, Department of Mines and Resources, Ottawa.
- Before the White Man Came, by D. Jenness, M.A., Litt. D., Chief, Division of Anthropology, National Museum of Canada, Department of Mines and Resources, Ottawa.
- From Fish to Man, by L. S. Russell, M.A., Ph.D., Geologist, Geological Survey, Department of Mines and Resources, Ottawa.
- Highways and Byways of the Maritimes, by J. M. Humphrey, Vancouver, B.C.
- Our Scientific Tomorrow, by J. A. Stiles, O.B.E., B.A.Sc., M.E.I.C., Ottawa.
- Hello Around the World, by F. D. Laurie, District Manager, Bell Telephone Company of Canada, Ottawa.

*Additional:*

- Through South Africa and Rhodesia, by D. de Waal Meyer, Government Trade Commissioner, Union of South Africa, Montreal.

The attendance was as follows:

	Seven children's lectures	Eight adult's lectures
Total attendance.. .. .	7,925	4,645
Average attendance.. .. .	1,132	581
<i>Additional</i>		
Total attendance.. .. .	.....	750

## ANTHROPOLOGICAL DIVISION

Diamond Jenness, Chief of the Division, reports:

During the fiscal year 1936-7 D. Jenness resumed charge of the division, and Harlan I. Smith, who had been archæologist on its staff since 1912, accepted superannuation.

## Field Work

The division had three parties in the field. C. M. Barbeau continued his studies of French-Canadian art and handicrafts in Quebec; W. J. Wintemberg excavated an Indian burial ground near Windsor, Ontario; and D. Leechman explored some ancient Eskimo remains at the southwestern entrance to Hudson strait.

Mr. Barbeau gathered much new information on ancient French-Canadian agricultural processes, implements, recipes for foods, dyes, and remedies, from the neighbourhood of Quebec and the lower St. Lawrence, including Gaspé; and he sent a set of agricultural implements to the Dominion Experimental Farm, where it will furnish a new museum. He recorded and photographed silver work and wood carvings, investigated the population, folk-lore, and activities of Gaspé peninsula, and studied the archives of Notre-Dame of Montreal. He brought back for the Museum nearly 500 photographs and a small collection of specimens.

Mr. Wintemberg's excavations at Windsor yielded a number of human remains, some stone and earthenware pipes, many fragments of pottery, and other objects. Among the human remains were two complete skeletons, and many incomplete ones that had been dug up by the prehistoric Indians, wrapped in bundles and reburied.

Mr. Leechman had intended to continue the excavations he began in 1935 at the west end of McLelan strait near Port Burwell, Quebec, but an epidemic of scabies among the Eskimo there made it impossible to employ them as assistants. As an alternative work was undertaken on Nuvuk island, some miles southwest of cape Wolstenholme, where he discovered a site of pure Cape Dorset culture containing about fifteen house ruins. Three that were excavated in one part of the site, and one in another, yielded about 600 archæological specimens.

Proceeding north with the *R.M.S. Nascopie* Mr. Leechman then excavated at Dundas harbour, Devon island, and at Arctic bay, Baffin island, where there are about seventeen house sites, some still in use.



### Office Work

In the earlier part of the year D. Jenness assembled and arranged the field notes he had gathered during the preceding winter in British Columbia. In August he was the guest of the British Association for the Advancement of Science at its meeting in Blackpool, England, and read a paper on "The Backwardness of the American Aborigines and Its Causes" before Section H. of that association. During the month he spent in England he examined and listed some rare old Canadian Indian specimens in two private collections in London, and also in the British Museum, the Oxford and Cambridge University Museums, and in the Cranmore Ethnographical Museum. Notes on these specimens have now been deposited in the files of the division. At Christmas he presided in Washington at the annual meeting of the Society for American Archæology, which had elected him its president the preceding Christmas.

Since November, when he was reappointed Chief of the Division, he has given his whole time to administrative work. Plans have been drawn up for a complete reorganization of the anthropological halls of the Museum, to be finished, it is hoped, before the meeting of the American Association for the Advancement of Science in Ottawa in 1938. The work of rearranging the cases, and installing new exhibits on a different principle from the old, is already under way. The new plan calls for seven groups of exhibits, to correspond with the seven geographic and ethnographic divisions of Canada.

While in England Mr. Jenness called on Sir Francis Knowles, from 1914-1921 physical anthropologist on the Museum staff, and examined a report on the Physical Characteristics of the Iroquois Indians that Sir Francis had not succeeded in finishing at the time of his resignation. As a result of this visit Sir Francis has now completed the report and forwarded it to the Museum, where Mr. Jenness has revised it and submitted it for publication. The Museum published two of Mr. Jenness' own reports, one on the Ojibwa Indians of Parry Island, the other on the Sekani Indians of British Columbia.

After his return from the field in December, Mr. Barbeau commenced the preparation of two reports, one on the "ceinture fléchée" (arrow sash), the other on the early woodcarvers of Quebec. He corrected the proofs of "*The Romancero du Canada*," a collection of fifty folk songs studied and annotated, and devoted much time, as usual, to office consultations, correspondence, and other matters relevant to his museum work. In two works from his pen recently published by the Macmillan Company, "*Quebec Where Ancient France Lingers*," and "*The Kingdom of Saguenay*" he gives credit to the National Museum for part of the material, which deals with the arts, traditions, and folk-lore of the lower St. Lawrence. Publishers and important business organizations had long felt the need of these books for the general reader and the tourist. Mr. Barbeau also organized an exhibition of Canadian folk-arts for the Folk Arts Center of the United States, in New York, drawing his material chiefly from the public collections at the National Museum, the National Gallery, and the Parks Bureau. The exhibition was opened on March 13 and will continue until May.

Harlan I. Smith continued until his retirement to assemble, amplify, analyse, and classify information on the sites and subjects of Canadian archæology. Again valuable results were received from the volunteer field work of Mr. Francis J. Barrow, of Sidney, B.C., and from Mr. Russell A. Johnston, of Helmsdale, Alberta. For the fourth successive year Mr. Barrow has made a three months' voyage, of many hundreds of miles, along the coast of British Columbia, making notes, sketches, photographs, and maps of Indian pictographs, this year reporting on over forty localities.

W. J. Wintemberg has completed his reports on the old Indian and Eskimo sites that he excavated a few years back at Tadoussac, Quebec, and on the west coast of Newfoundland. He is now engaged in the preparation of a report on the Sidney-Mackay site in Simcoe county, Ontario. The Museum has recently issued his detailed report on the Roebuck Village Site, and the Royal Society of Canada published in its Transactions two articles from his pen, one entitled "The Probable Location of Cartier's Stadacona," and the other "Shell Beads of the Beothuk."

The number of foreign scientists who visited the division during the year attests to the high reputation its work enjoys abroad. Dr. Louis C. G. Clarke, Director of the University Museum of Archæology and Ethnology, Cambridge, England, came to inspect its ethnological collections; Dr. Miriam L. Tildesley, of the Royal College of Surgeons, London, England, to inspect its anatomical material and to co-ordinate its work in physical anthropology with that of anatomists elsewhere; and Mr. H. R. Hall, Clerk of the House of Commons, Wellington, New Zealand, to inquire into its methods of disseminating information to schools and other educational institutions. Mr. G. W. Rowley, archæologist of the British Canadian Arctic Expedition, spent a week studying the division's collections of Eskimo material from the eastern Arctic; Dr. Frederic Johnson, of Phillips Academy, Andover, worked for several days on its archæological collections from Quebec and the Maritime Provinces; and Dr. Frederica de Laguna, of the University of Pennsylvania Museum, Philadelphia, remained over a month studying the archæological material from all of eastern Canada and Newfoundland. Dr. Julius E. Lipps, formerly Director of the Cologne Museum, Germany, now of Columbia University, New York, spent a day examining manuscript material in the division's files, and subsequently Mr. Irving Goldman, of the same university, was sent up for two weeks to study several of its manuscripts.

### Exhibits

A collection of Eskimo archæological material was despatched to the Philadelphia Academy of Sciences and displayed at its Centenary Celebration in March 1937. A French-Canadian handicraft exhibit, assembled by Mr. Barbeau from both the Museum and outside collections, was shipped to New York and is now on display at the Folk Arts Centre, 673 Fifth Avenue. In addition to these two major exhibits, minor ones were arranged for the Central Canada Exhibition, Ottawa, the House of Commons, and other places.

### Publications

- The Ojibwa Indians of Parry Island. By D. Jenness. National Museum of Canada, Bulletin 78.
- The Sekani Indians of British Columbia. By D. Jenness. National Museum of Canada, Bulletin 84.
- Prehistory of the Canadian Aborigines. By D. Jenness. Published in "Custom is King", Hutchinson's, London, England.
- The Probable Location of Cartier's Stadacona. By W. J. Wintemberg. Transactions, Royal Society of Canada, 1936.
- Shell Beads of the Beothuk. By W. J. Wintemberg. Transactions, Royal Society of Canada, 1936.
- The Roebuck Prehistoric Village Site. By W. J. Wintemberg. National Museum of Canada, Bulletin 83.
- The Modern Growth of the Totem Pole on the North-West Coast. By C. M. Barbeau. Published in "Custom is King", Hutchinson's, London, England.
- Bright Yarn on the Loom. By Marius Barbeau. Published in the Canadian Geographical Journal, May 1936.
- Quebec Where Ancient France Lingers. By Marius Barbeau. Published by the Macmillan Company of Canada, 1936.
- The Kingdom of Saguenay. By Marius Barbeau. Published by the Macmillan Company of Canada, 1936.

### Lectures

- Québec où Survit l'ancienne France. By C. M. Barbeau, l'Alliance Française, Toronto, Ontario, April 24, 1936.
- Preservation of Eskimo Specimens in the Field. By Douglas Leechman. Annual Meeting, American Association of Museums, New York, U.S.A., May 12, 1936.
- Backwardness of American Aborigines and Its Causes. By D. Jenness. British Association for Advancement of Science, Blackpool, England, September 13, 1936.
- Indian Musical Instruments. By Douglas Leechman. Devonshire School, Ottawa, Ontario, October 26, 1936.
- The Eastern Arctic. By Douglas Leechman. Imperial Order of the Daughters of the Empire, Ottawa, Ontario, December 15, 1936.
- Eskimo of the Eastern Arctic. By Douglas Leechman. Young Men's Canadian Club, Montreal, Quebec, January 11, 1937.
- The Indians of Canada. By D. Jenness. Pilots, R.C.A.F., Ottawa, Ontario, February 20, 1937.
- Eskimo Summer. By Douglas Leechman. Southminster Church, Ottawa, Ontario, February 28, 1937.
- Folk Songs of French Canada. By C. M. Barbeau. Folk Arts Centre, New York, U.S.A., March 29, 1937.

### Accessions

Archæological collections have been augmented about the usual amount during the year, mainly through the field work of Mr. Wintemberg and Mr. Leechman.

#### FROM THE STAFF

*W. J. Wintemberg:*

13 packing cases of archæological material from burial site in Essex county, Ontario.

*D. Leechman:*

700 specimens, from eastern Arctic.

#### BY EXCHANGE

*Frank Eames:*

Archæological material, from Leeds county, Ontario.

## BY DONATION

*Wilfred Jury:*

Pottery fragments, from Elgin county, Ontario.

*Rutherford Smith:*

Pottery fragments, from Wentworth county, Ontario.

*Charles Donlon:*

Stone adze, from Essex county, Ontario.

*W. F. Wuest, per L. S. Russell:*

Grooved stone hammer, from Alberta.

*D. A. Nichols:*

Arrow-points, from Kamloops reserve, British Columbia.

Soapstone, from Hebron, Labrador.

*G. D. Mallory:*

Arrow-point, from Leeds county, Ontario.

*P. G. Downes:*

Pottery fragments, from Reindeer lake, northern Saskatchewan.

*R. T. D. Wickenden:*

Archæological specimens, from southern Alberta and Saskatchewan.

*Dr. R. L. McKinnon:*

Archæological specimens from the east coast of Baffin island.

*Mrs. Donald J. Moorman:*

Beaded cloth leggings, formerly belonging to Sir John A. Macdonald.

*F. H. Howard:*

Stone ax from Australia.

*Dr. C. H. D. Clarke:*

Skeletal material from Thelon Game Sanctuary.

*G. Balfour:*

Ethnological and skeletal material from Queen Charlotte islands.

*James Walker:*

Basketry cradle and two cedar bark mats, from British Columbia.

*Arthur Peake:*

Skeletal material from Queen Charlotte islands.

*Mrs. George Major:*

Ceinture fléchée.

*National Parks Bureau:*

Painted tanned buffalo hide.

## BY PURCHASE:

1 cradle board.

## BIOLOGICAL DIVISION

R. M. Anderson, Chief of the Division reports:

## Field Work

## BRITISH COLUMBIA

Hamilton M. Laing, of Comox, B.C., with two assistants, George P. Holland and Charles J. Guiguet of Vancouver, carried on an expedition on the mainland coast and adjacent islands of British Columbia, collecting specimens and data connecting with the work done in 1935 along the eastern and northern coasts of Vancouver island. The party started from Vancouver and travelled by steamer to Powell river June 17. Regarding Camp I Mr. Laing writes that when he was there in 1904 the region was a wilderness, but by 1936 the original timber was gone and damming of the river and establishment of a pulp-mill had made such changes that



original conditions of wild life had been swept away. Camp II was established at Horseshoe lake, 8 miles north of Stillwater, at elevation of 649 feet, from June 14 to July 18. The strip of country extending from Powell river southward to the Gordon Pasha lakes and running many miles into the interior consisted of logged and burned lands or lands burned before being logged, varying only in the newness or oldness of the various burns. These coastal areas, which twenty-five years ago stood under virgin coniferous timber, now lay under an upspringing crop of deciduous trees and shrubbery, with only small stands of evergreens. The region immediately about Horseshoe lake was picked as a collecting ground because it was said to be unburned, but it was found to have been burned approximately one hundred years ago, and showed well the conditions that follow natural reforestation in British Columbia. The area was as nature made it except that it had been "shingle-bolted," all the original cedar relics removed. In the eyes of the lumbermen of today such timber was unmerchantable, this was the reason of its being left as standing timber. The Horseshoe Lake blocks of second growth timber stood as an island in the burned lands and served as a reservoir of wild life. It had, of course, received its own fauna through the last hundred years from the surrounding country that stood then under original forested conditions. Now doubtless it was slowly giving back life to the burned lands. There is no doubt that in such fires, which sweep whole valleys or slopes, all small wild life is completely wiped out. Even if mice, for example, could retreat below ground to escape the path of the flames, they must perish miserably in a few days when emerging into a sea of ash and char where no living vegetation is to be found. Probably a few mice or shrews escape by taking refuge in sloughy hollows among sweet-gale and spiraea, but such must be doubtful haven. Heat and suffocating smoke probably search out all such places. At any rate in these burns there were long stretches that showed not a sign of a living mammal. For example, the vicinity of Tony lake, lying at the edge of the green timber, yet bordering slash and burn, showed evidence of white-footed mice, pack-rats, long-tailed voles, and shrews. This had been logged in 1919 and burned in 1920. But a mile or two out in two burns where the fire working northward had swept clean, there was almost a complete dearth of mammalian life among the upspringing shrubbery. The removal of the mossy ground cover and rotten logs removes the frog, slug, snake, weasel, shrew, etc. Probably their return is a matter of a quarter of a century at least, depending on nearness to source of supply. Long-legged mammals like deer and bear may to some extent escape before forest fires, but probably most of the smaller creatures whose natural tendency is to hide rather than run do not escape.

Camp III. The party moved on July 19 to Stuart island, which partly blocks the mouth of Bute inlet, and maintained a collecting station until July 30. Conditions had been modified in many ways by settlement, and much of the timber had been removed, but good collections were made. The swift water in the channels of this region is responsible for some peculiarities of small mammal distribution, and new birds were reported as coming to the deciduous growth which follows forest fires.

Camp IV, at Fawn bluff, 7 miles up Bute inlet, July 30 to August 17, offered to the collector variety, which is rare in these inlets; with a cosy

bay, with safe anchorage, Kenzie lake behind, and some of the original timber left. Mammalian conditions were probably much as in the original, although this was said to be a poor fur area.

Camp V was established at Grassy bay, Loughborough inlet, August 17 to September 7. The vicinity of Grassy bay had been logged and partly burned, and is now being reforested by deciduous growth. The contours here were low, with the ridges timbered to their summits, and these summits, about 2,000 feet, were unburned. Most of the peninsula between Phillips arm and Loughborough had been stripped of all timber that could be easily reached. The reforestation varied from ten to fifteen years second growth, in which the few Douglas firs were beginning to grow their first cones, to the newer, recently abandoned workings lying open under a cloak of purple fireweed. Grassy bay in early times had been a haven for wild fowl and there was evidence that the shallow bay, with tide flat and grassy flat, still had attraction for a few ducks and other water birds.

Camp VI was established on the Kingcome flat at the upper end of Kingcome inlet, on the Ernest Halliday farm, September 9 to 26. These flats comprised an area of flat land about 2 miles across, cut by the river and several lesser channels, all of which rose and fell daily with tide and rainfall. The river being short and rising in glacial sources rose and fell with surprising suddenness. The flats were walled by high ridges, rising sharply to 4,000 or 5,000 feet in places. The valley for a distance of 10 miles had been logged, and being abandoned, shut up, and the bridges having been burned some ten years back, was reverting to a second growth wilderness. These grades now could not be penetrated without ax work in places. The party returned by way of Alert bay to Vancouver. The total collections of the party consisted of 543 mammals, 149 birds, and 23 amphibians and reptiles.

#### ONTARIO

Dr. Thomas M. C. Taylor, of the University of Toronto, with two botanical assistants, Mr. S. T. B. Losee and Dr. M. W. Bannan, and one zoological assistant, Dr. D. A. MacLulich, attending to the zoological work, had charge of a field party in Thunder Cape area, on the northwest side of lake Superior, Ontario. The base camp was established at Silver Islet, Ontario, and extensive and important botanical and zoological collections were made, linking up as much as possible with previous explorations in the Lake Superior region. The botanical report on this expedition is being worked up in the Department of Botany, University of Toronto. A brief summary of the botanical work is included under "Botany" in the following pages.

The faunal survey made a small but representative collection of mammals, and a few birds, amphibians, and reptiles were collected by Dr. D. A. MacLulich. Many persons saw the collection and it is felt that the expedition had, as a by-product, considerable educational value, particularly among the young people.

The collection of amphibians and reptiles included the garter snake and six species of frogs, toads, and salamanders. Observations increased the list for the locality to two reptiles and eight amphibians. Of particular interest was the occurrence of the mink frog in a small, boggy lake. Speci-

mens of 25 species of birds were collected and the total number of kinds listed was 105. Proof of breeding was obtained for 32 species. A colony of double-crested cormorants has increased in the last few years, until there were 25 nests on Carney rocks in 1936. Other interesting records were: duck hawk on Shangoia island, Virginia and sora rails, whip-poor-will, red-headed woodpecker, yellow-bellied flycatcher, raven, Hudsonian chickadee, bobolink, Leconte's sparrow, and Lincoln's sparrow. Black-billed cuckoos were numerous throughout the district. This was unusual, as few residents remembered the bird in other years. It is thought that cuckoos increase due to the excessive abundance of tent caterpillars. The bird fauna was essentially of the Canadian life zone, but the above list includes several southern forms of the transition zone.

The mammal list totalled 37 species, 21 of which were represented by specimens. Thunder cape is rich in the larger mammals, although some animals have been decreasing in numbers. Fisher and caribou have been taken in the last five years, but are apparently no longer native to the district. Moose and deer were first found by the local people in 1894.

Much of the land of Sibley peninsula is unsuitable for agriculture and of value only for timber, wild-life production, and recreational uses.

C. L. Patch and J. E. Perron collected material in Algonquin park from October 11 to 26, principally for the construction of a beaver group for exhibition. This work was carried out with the co-operation of Mr. W. C. Cain, Deputy Minister of Lands and Forests for Ontario, Mr. F. A. MacDougall, Superintendent of Algonquin park, and Mr. Tom McCormick, Chief Ranger. A few small mammals, amphibians, and reptiles were also collected.

C. E. Johnson collected a number of mammals, birds, and molluscs in the vicinity of Ottawa and at Danford lake, Quebec.

#### NORTHWEST TERRITORIES

Advantage was taken of the presence of a Topographical and Air Survey party in the region east of Great Slave lake to carry out a zoological reconnaissance of the Thelon Game Sanctuary, making use of aerial transport. This work was in charge of Dr. C. H. D. Clarke, of the University of Toronto, assisted by Mr. W. H. B. Hoare, former warden in charge of the Thelon Sanctuary.

The field party started on June 18 and on July 10 made contact with Lieut. L. E. Wray, of the Royal Canadian Air Force, at Reliance, Northwest Territories. With the co-operation of Lieut. Wray and his staff an aerial reconnaissance of the sanctuary was made, two ground stations were established between the Thelon and Back rivers, and the outfit of the party was moved to a point on the west boundary of the sanctuary. Ground work, by canoe, was carried out for the balance of the season, starting from this point, and returning over Pike portage to Reliance.

The Thelon Game Sanctuary comprises an area of about 15,000 square miles around Hanbury and Thelon rivers. It was set aside as a game sanctuary particularly for the benefit of the musk-ox, but it also has large herds of caribou, and in fact the most complete representation of the barren-

land wild life of any area in the Canadian barrens. The chief purpose of the reconnaissance was to map the summer range of the musk-ox, and to make as complete a count of these animals as was possible. Circumstances combined to bring about a very large amount of flying over the sanctuary, so that the distribution of the musk-ox herds within it and on its borders was definitely ascertained. An estimate of the numbers was made.

In addition to the observations on musk-oxen a great deal of evidence was obtained as to the present abundance and movements of the barren-ground caribou, which was found distributed throughout the country during the time in which the reconnaissance was carried out. Several specimens were examined for diseases and parasites.

A complete record was kept of observations of mammals, birds, and fishes, and a small collection was made. All specimens collected were examined for diseases and parasites. Small mammals were found to be exceedingly scarce, although there was evidence of a recent abundance. Only a few specimens were obtained in spite of constant trapping. A small collection of plants was made.

The musk-ox reconnaissance evolved into a co-operative effort, with Lieut. L. E. Wray and members of the Royal Canadian Air Force contributing information and assistance responsible in no small measure for its success. The party was also indebted for assistance and hospitality to members of the Topographical and Air Surveys Division and the Royal Canadian Mounted Police, to trappers and others resident in Reliance area, and to the District Government Agent.

### Lectures

Making Use of the National Museum of Canada. By R. M. Anderson. In Museum. Five lectures by request to students and teachers of Ottawa Normal School, Sept. 21-25, 1936.

Observations on Migrations and Winter Habits of Willow and Rock Ptarmigans. By R. M. Anderson. Paper, American Ornithologists' Union, at Carnegie Museum, Pittsburgh, Pa., Oct. 21, 1936.

Large Game Animals and Emergency Use of Small Game. By R. M. Anderson. National Museum, by request of Senior Air Officer, Department of National Defence, for pilots and camera operators taking advanced photographic course, R.C.A.F., Feb. 18, 1937.

Museum Methods. By C. L. Patch. Museum, June 3, 1936; First Avenue School pupils, Museum, June 10, 1936.

Backstage in a Museum. By C. L. Patch. Museum, Feb. 27, 1937; Museum, March 3, 1937; First Avenue Home and School Club, Museum, March 10, 1937.

### Exhibition Work

The most important installation in the exhibition halls of the National Museum was a habitat group consisting of three wood buffalo, adult bull, adult cow, and calf, and three northern timber wolves, with accessories and painted background, representing an autumn scene at edge of the Salt Plains, Wood Buffalo park, near the northern boundary of Alberta. This group was presented by Mr. Harry Snyder, of Montreal, and formally opened for exhibition at a public reception on May 27, 1936. Another important accession is a mounted specimen of bighorn sheep (*Ovis canadensis*) collected on Grizzly creek, Alberta, by Mr. Alex-



ander Fraser, of Pittsburgh, Pennsylvania, in 1930, and donated by the collector to the National Museum of Canada in 1936. This specimen is listed in "Records of North American Big Game," edited by the late Mr. Prentiss N. Gray, in 1932, as thirty-fourth in size of horns recorded (length of front curve  $39\frac{3}{4}$  inches) and believed to be the largest specimen of this species mounted complete with its own skin. Other valuable donations were made by the Royal Canadian Mounted Police, by the National Parks Bureau, and by other public-spirited citizens.

Special exhibits temporarily displayed in the museum building lobby included the record Rocky Mountain sheep presented by Mr. Alexander Fraser of Pittsburgh, Pennsylvania, and the splendid silver fox presented by Mr. F. D. Burkholder of Ottawa. Two cases of birds were displayed. One contained the game birds presented by Mr. E. F. G. White of Ottawa, and the other contained the last Canadian wild turkey, taken in Essex county, Ontario, in 1879, presented by Mr. J. H. Fleming of Toronto.

C. L. Patch, with his assistants in the preparatory section, continued work on the cleaning, tanning, and making up of fresh and salted skins for mounting and for the scientific research collection. He also continued the work of making models and finished mounts of various small mammals and birds, and devoted considerable time to moving and rearranging groups and single exhibits in the museum exhibition halls. A special biological exhibition was prepared for the Central Canada Exposition at Ottawa, in August, 1936.

C. E. Johnson continued work preparing wax work and other accessories for small habitat groups which are gradually replacing old single specimen exhibits in the museum halls as rapidly as they can be made. He has also made drawings of various objects, coloured photographic enlargements, lantern slides, etc., as required. Thirty-one illuminated window frames were also made and installed in the mammal and bird hall on the second floor, the motifs being appropriate designs of different types of Canadian woodland, three with pine trees and two with birch trees, done on heavy parchment paper giving the effect of leaded, stained-glass windows, reducing the amount of direct daylight on the specimens and greatly improving the appearance of the exhibition hall. Henri Lefebvre of the Division of Palæontology assisted in lining and colouring these large drawings. Local field collecting was done when possible throughout the year. The following pieces of work were also done:

Lantern slides coloured .....	112
Drawings .....	8
Case labels, range maps, etc.....	26
Colour plates .....	5
Plaster moulds .....	9
Plaster casts .....	1
Wax and celluloid pieces, accessories to bird and mammal exhibits.	127
Photo enlargements, retouched, lettered, etc.....	3
Collections:	
Mammals, made into skins.....	16
Birds, made into skins.....	1
Nest of oven-bird with eggs.....	1
Molluscs .....	10

Exhibits completed:

Case containing 16 plates of Canadian mammals in colour, painted from our own material and placed in the Deputy Minister's office.

Large Indian clay pot restored, coloured, and put into shape for Central Canada Exhibition, later added to anthropological exhibit in Museum.

Towhee group with nest *in situ*, completed for anthropological exhibit in Museum.

J. E. Perron prepared 567 skulls of mammals and birds for the osteological collection. About three months were spent in tanning and preparation of large mammal skins, including one Rocky Mountain elk, three barren-ground caribou, three Dall's mountain sheep, three white-tailed deer, five Rocky Mountain cougar, eight beaver, one Pacific Harbour seal. Mr. Perron assisted Mr. Patch in field work in the vicinity of Ottawa and in Algonquin park.

D. J. Blakely prepared 99 birds (ducks, jaegers, loons, gulls, owls, eagle) and smaller mammals (muskrats, porcupines, groundhogs, rabbits) for the study collections.

Repairs were made to specimens belonging to the Central Experimental Farm and the Royal Canadian Mounted Police.

Two hundred and six mammals and birds were loaned to educational institutions for use in nature study and in art work.

Charles H. Young, collector-preparator specialist, made some local collections, particularly of insects. He was retired on superannuation February 11, 1937, after nearly thirty years of service in the department.

### Accessions to Museum

At the end of the fiscal year, March 31, 1937, the catalogued specimens of mammals numbered 14,287; of birds 27,545; of amphibians and reptiles 4,734; and of plants 138,654.

A considerable amount of old botanical material has been mounted, numbered, and filed in the herbarium. A field party in Batchawana Bay region, east of lake Superior, in 1935, collected large series of plants and a complete set of all the species and varieties, numbering over 600 forms, have been determined in the Department of Botany, University of Toronto, and added to the National Museum collection. A similar expedition to Sibley peninsula, Port Arthur district, Ontario, in 1936, also yielded a large collection of plants, which are being worked up at the University of Toronto.

Many zoological specimens were added through donations from other departments and private individuals. Particular thanks are due to the Royal Canadian Mounted Police, the Bureau of Northwest Territories and Yukon Affairs, and the National Parks Bureau for valuable collections made by members of their staffs.

## MAMMALS

*By Gift*

- Dr. Ivan W. Parnell, Institute of Parasitology, McGill University, Macdonald College, Que.: 1 mouse in formalin; 2 lemmings, juveniles, born in captivity, from Belcher islands (Hudson bay), pair; 1 polar bear, skull only, Resolution island; 4 marten, 1 ermine from Nipisiguit river, N.B.; 1 snowshoe rabbit from Moosonee, Ont.; 4 snowshoe rabbits from Anticosti island, Que.; 2 foxes from Moosonee, Ont.; 1 mink, 1 snowshoe rabbit, 3 rabbits, black, juv., from Notre Dame du Nord, Que.; 2 house mice, 7 white foxes, 1 blue fox, 1 silver fox, 1 Arctic hare, from Lake harbour; 3 Greenland collared lemmings from Dundas, Devon island; 4 Labrador lemmings from east side of Hudson bay; 1 cotton-tail rabbit from Macdonald College, Que.; 1 Labrador lemming from Belcher islands.
- Russell A. Johnston, Helmsdale, Alta.: 1 skull of coyote (in the flesh), about one mile north of Buffalo, Alta.
- Arthur C. Peake, Quatsino, Vancouver island, B.C.: elk (wapiti) bones from "Southeast arm" of Quatsino sound, Vancouver island, B.C.; 4 skulls of Vancouver Island mink, 1 skull of Vancouver Island raccoon from Quatsino sound, Vancouver island, B.C.
- Dr. R. E. DeLury, Central Experimental Farm, Ottawa: 1 big brown bat, Central Experimental Farm, Ottawa.
- Lands, Northwest Territories, and Yukon Branch, Department of the Interior, Ottawa: 4 northern timber wolves, 4 skins, 4 skulls, and 2 skeletons, 1 Canada lynx, from Wood Buffalo park, Alta.
- K. G. Chipman, Ottawa, Ont.: 1 long-tailed shrew from Larrimac Links, Gatineau co., Que.
- Royal Canadian Mounted Police, Ottawa, Ont.: 1 barren-ground caribou foetus, secured on east side of Great Slave lake, N.W.T., collected by J. Robinson, at Reliance, N.W.T.; 1 caribou and 1 ermine collected at Craig harbour, N.W.T., by R. W. Hamilton.
- E. F. G. White, Ottawa, Ont.: 1 little brown bat, Ottawa, Ont.
- Keith Reynolds, London, Ont.: 4 big-eared brown bats from near Fletcher, Kent co., Ont.
- Tom H. Manning, London, England: 2 Greenland collared lemming (*Dicrostonyx groenlandicus richardsoni*), 3 Back's brown lemming (*Lemmus trimucronatus*), 3 Arctic weasel (*Mustela arctica semplei*), and 1 *Mus* sp. (mummified carcass), from Southampton island.
- Col. C. M. Edwards, Ottawa: 1 northern white-footed mouse, albino (in the flesh), Mousseau lake, Gatineau co., Que.
- R. Peters, Red Willow, Alta.: 1 skin and skull of flying squirrel from Red Willow, in Camrose Federal Constituency, north of Stettler, Alta.
- Dr. Nicholas Polunin, Oxford University, England: 1 lemming from Port Harrison, Que., east side of Hudson bay, about 58 degrees north; 1 lemming from Chesterfield inlet, Keewatin district, N.W.T., preserved in formalin.
- Douglas Leechman, Ottawa, Ont.: 1 right lower mandible of arctic fox from Nuvuk islands, cape Wolstenholme, Hudson strait, Que.
- Alexander Fraser, Pittsburgh, Pa.: 1 male Bighorn sheep (*Ovis canadensis canadensis*) from Grizzly creek, Alta.
- Bureau of National Parks, Department of Mines and Resources: 2 young Rocky Mountain cougars, from Jasper National park, Alta.; 1 hunter's skin of marten (cased) without skull from E. N. Russell, Supt. Yoho National park, B.C.
- G. H. Hammond, Ottawa, Ont.: 2 mice in the flesh, Wilson lake, Pontiac co., Que.; one bat from cave, Wilson lake, Pontiac co., Que.
- W. H. B. Hoare, Britannia Heights, Ont.: 1 shrew (*Sorex cinereus cinereus*) in the flesh, frozen, from Chibougamau, Que.
- W. Earl Godfrey, Wolfville, N.S.: 1 skull of Nova Scotia wildcat, from Black River region about 11 miles south of Wolfville, N.S.

## AMPHIBIANS AND REPTILES

<i>By Museum Expeditions</i> .....	52
Hamilton M. Laing and Geo. P. Holland, southern coast of British Columbia: 1 clouded salamander, 5 northwestern toads, 1 western tree frog, 3 western spotted frogs, 2 northern alligator lizards, 2 wandering garter snakes, 2 northwestern garter snakes—16 specimens.	
D. A. MacLulich, Thunder Bay district, Ontario: 2 Jefferson salamanders, 6 American toads, 2 spring-peeper frogs, 3 leopard frogs, 17 wood frogs, 2 eastern garter snakes—32 specimens.	
P. A. Taverner, Herchmer, Manitoba: 4 wood frogs—4 specimens.	
<i>By Gift</i> .....	19
L. H. Beamer, Meaford, Ont.....	1
J. Roland Brown, Hamilton, Ont.....	1
Stuart Criddle, McMurray point, Man.....	2
H. F. Hughes, Shaunavon, Sask.....	1
A. LaRocque, Algonquin park, Ont.....	12
R. W. Tufts, Garland, N.S.....	2

## LAND AND FRESHWATER MOLLUSCS

*By Gift*

- H. J. Griffiths, Institute of Parasitology, Macdonald College, Que.: 6 lots  
molluscs in alcohol from Berwick and Morden, N.S.
- Buffalo Museum of Science, Buffalo, N.Y.: 5 lots from various localities around  
Buffalo, N.Y.
- Museum of Zoology, University of Michigan, Ann Arbor, Michigan: about 200  
lots from various localities in Canada. These are duplicates from the  
Bryant Walker collection, the latter having been presented recently to the  
University of Michigan.
- Institute of Parasitology, Macdonald College, Que.: 18 lots from various local-  
ities in Canada.

*By Staff*

- A. LaRocque, Bureau of Geology and Topography: 3 lots, Cazenovia creek,  
near Buffalo, New York, U.S.A.; 3 lots, Ann Arbor, Michigan, U.S.A.

**Botany**

In continuation of the study of the flora of the north shore of lake Superior begun last year, a party was sent to investigate the Thunder Cape area. The party was in charge of Prof. Thomas M. C. Taylor, Department of Botany, University of Toronto, with two botanical assistants, Mr. S. T. B. Losee and Dr. M. W. Bannan. Although all were primarily engaged in collecting herbarium material, Mr. Losee devoted most of his time to the obtaining of ecological data and taking photographs. Dr. D. A. MacLulich was attached to the party as zoologist. The following brief summary of the botanical work is submitted by Professor Taylor. A more detailed account of the ecology and systematic botany is in course of preparation.

## BIOLOGICAL EXPEDITION TO SIBLEY PENINSULA, LAKE SUPERIOR

The general area investigated comprised the greater part of the Sibley Forest Reserve, Sibley township, Thunder Bay district. Especial attention was given to the southern third of the peninsula, as in this part there is a variety of habitats not found to the same extent in the upper part.



As in the previous year, the purpose of the expedition was to make collections and records of the vascular plants, birds, amphibia, and reptiles, and within the time available to obtain information on their habitats and ecological relations. Certain meteorological data were also obtained which may give a basis to account for the occurrence of the sub-arctic flora long known to exist in this region.

The peninsula south from the north end of lake Marie Louise is very varied in its topography. Most prominent is the series of high mesas known collectively as the "Sleeping Giant." These are capped by a diabase sill some 250 feet thick overlying greywacke and shale of the Animikie series. The highest elevation in the peninsula, indeed in the surrounding regions as well, is 1,805 feet, found on the top of the "Breast" of the Sleeping Giant. The high cliffs, 800 feet in one instance, and the well-developed talus slopes were found to be rich in interesting species. Extending down the west coast as far as Sawyer bay and then turning abruptly southeast to Silver Islet landing are cliffs of the exposed Sibley series that overlies the Animikie. Rocks of this same series form low cliffs along the lake shore at Camp bay. Their height decreases gradually towards the east until they finally disappear in the vicinity of Finley point. Numerous diabase dykes of various dimensions are found throughout the southern and western parts of the peninsula. A series of these form the 'back bone' of the islands off Silver islet, of which Trowbridge and Sangoia are the largest. Low boggy areas covered in part by cedar and spruce are well developed on all sides of lake Marie Louise, particularly to the southeast. A second series lies in the irregular basin between the Sibley cliffs and the Sleeping Giant. Lakes are numerous throughout and, with the exception of lake Marie Louise, are of the typical, small, northern muskeg type. Lake Marie Louise, although shallow, is about 3 miles long by half that in width. Many of the lakes showed characteristic zoning of the aquatic and littoral vegetation. The most important stream is a good-sized creek that flows from the south end of lake Marie Louise, emptying into lake Superior just east of Silver Islet landing. Most of the other lakes are also drained by small streams that tend to dry up as the summer progresses.

Silver Islet landing, at the south end of the peninsula, is served by a fairly good motor road that leaves the Nipigon highway just west of Loon lake. As this road runs almost along the long axis of the peninsula it made the greater part of the area accessible for investigation. The prosecution of the work was further facilitated through the use of a launch. This saved much time in avoiding the necessity of travelling over rough country in order to explore more remote regions adjacent to the coast. Its use also made possible the exploration of all the larger islands from Pie island in the west to Porphyry island in the east.

The following areas were examined more or less extensively: (1) the four mesas that comprise the Sleeping Giant and Thunder mountain with their cliffs and talus slopes; (2) virtually the whole coast-line from Foster point on the east around nearly to Hoorigan bay on the west; (3) Marie Louise creek (known locally as Six-Mile creek) from source to mouth; (4) the southern portion of lake Marie Louise (Six-Mile lake); (5) the Sibley cliffs and talus slopes from Silver Islet to Sawyer bay; (6) both arms

of Fork bay; (7) Trowbridge, Sangoia, and Porphyry islands; (8) Pickerel, Joe, Lizard, and Ponsford lakes, as well as all those south of lake Marie Louise; (9) Squaw bay; (10) the boggy area running southeastward from lake Marie Louise to Middlebrun bay; (11) the slightly saline springs that are just inland from Perry bay; (12) the sandy area near the mouth of Marie Louise creek; (13) the swampy tract between the two dams at the outlet of lake Marie Louise. Many other places of lesser importance were also visited and studied.

About fifty years ago the peninsula was almost completely burnt over; this gives it a peculiar interest from an ecological point of view. The successional relations have been studied and will be reported on later. Although the climax forest for the region is not as yet fully developed, it seems probable that it will consist largely of a mixed stand of spruce, balsam, poplar, and paper birch. Red and white pines appear casually. Prior to the disastrous fire just referred to the peninsula was sufficiently well covered by white pine to justify the British Admiralty setting aside the area as a timber reserve. At the present time, except for some small stands of pulpwood that are rapidly being cut off, there is little economic value left in the forest.

The party was in the field for about eleven weeks from June 15. During this time it is estimated that about 2,300 collections were made, mostly in triplicate, of the vascular plants. These are distributed among 600 to 700 species and varieties. Numerous photographs were also taken to illustrate topographic features, the characteristics of vegetational types, and details of the growth and habitat of certain of the more unusual species.

Acknowledgment is made to the officials of the Ontario Forest Branch, Port Arthur; to the Department of Botany, University of Toronto, and to numerous local residents for the cordial assistance they rendered in the investigation.

#### *Herbarium Work*

A. E. Porsild, who has been employed for several years as a botanist by the Department of the Interior, making investigations of the flora of northern Alaska, northern Yukon territory, the Mackenzie district and Hudson Bay region of the Northwest Territories, in connexion with the introduction of reindeer from Alaska into Canadian territory, was detailed to do botanical work in the National Herbarium, beginning work on April 1, 1936.

He spent most of his time during the year working up the extensive collection of arctic and sub-arctic plants that he made during this work in the north, and in preparation of a scientific report on the flora of the western Arctic region of Canada. In connexion with this work he spent considerable time sorting and naming various unmounted botanical material and having it mounted and filed in the systematic collection of the National Herbarium. The work of mounting, labelling, and filing specimens was continued, 6,534 sheets being labelled and mounted during the year. The number of sheets officially registered and numbered in the National Herbarium totalled 138,634 on March 31, 1937. In addition, 741 sheets of plants were named; 9,773 sheets were received as donations and on account of exchange, and 9,558 sheets were distributed.

<i>Plants received on account of exchange</i> .....	1,085
University of California, Berkeley, Cal.....	67
Botanical Museum, Helsingfors, Finland.....	305
Dr. Eric Hultén, Lund, Sweden.....	640
U. S. National Museum, Washington, D.C.....	52
N. Y. Botanical Garden, New York, N.Y.....	21
<i>Plants received as donations</i> .....	8,688
A. E. Porsild, National Herbarium, Ottawa.....	140
Dr. C. C. Heimbürger, Ottawa.....	2
A. Kellett, Experimental Farm, Ottawa.....	1
Leslie Jenkins, Hoosier, Sask.....	8
P. A. Taverner, Ottawa.....	33
C. H. D. Clarke, Ottawa.....	116
John Carroll, Ottawa.....	68
R. S. Campbell, Ottawa.....	72
Dr. H. M. Raup, Arnold Arboretum, Jamaica Plains, Mass...	8,238
<i>Plants distributed on account of exchange</i> .....	9,558
Dr. M. P. Porsild, Godhavn, Greenland.....	348
Botanical Museum, Copenhagen, Denmark.....	872
Dr. Eric Hultén, Botanical Institute, Lund, Sweden.....	1,025
Gray Herbarium, Harvard University, Cambridge, Mass.....	1,520
U. S. National Museum, Washington, D.C.....	771
National Museum, Botanical Department, Stockholm, Sweden	341
New York Botanical Garden, New York.....	1,131
Kew Botanical Gardens, London, England.....	676
Botanical Museum, Helsingfors, Finland.....	954
Botanical Museum, Academy of Sciences, Leningrad, U.S.S.R.	94
Dept. of Botany, University of Alberta, Edmonton, Alberta..	521
Botanical Museum, Berlin-Dahlem, Germany.....	449
University of California, Berkeley, Cal.....	403
University of Toronto, Department of Botany, Toronto, Ont...	403
<i>Plants loaned</i> .....	2,728
Nicholas V. Polunin, Gray Herbarium, Harvard University, Cambridge, Mass.....	1,856
Dr. Eric Hultén, Botanical Museum, Lund, Sweden.....	238
A. J. Grout, Newfane, Vermont.....	42
Wm. C. Steere, Department of Botany, University of Michigan, Ann Arbor, Mich.....	495
Dr. H. M. Raup, Arnold Arboretum, Jamaica Plains, Mass..	20
L. P. Khanna, University College, Rangoon, Burma.....	27
A. Kellett, Experimental Farm, Ottawa.....	1
William G. Dore, Experimental Farm, Ottawa.....	43
Dr. Lincoln Constance, State College of Washington, Pull- man, Washington.....	1

## ORNITHOLOGICAL DIVISION

P. A. Taverner, Chief of the Division, reports as follows:

The principal field work was an ornithological survey along the line of the Hudson Bay railway in northern Manitoba. The party consisted of P. A. Taverner, R. W. Smith of Wolfville, N.S., and T. E. Randall of Edmonton, Alta.

The ornithology of Churchill, on Hudson bay at the edge of the Arctic Faunal Zone, was well studied in 1930 by Museum officers and by others since. The ornithological fauna of southern Manitoba south to the boundary where Upper Austral influences intrude upon the Transition Life Zone is well known, but of the intervening territory little authentic inform-

ation is available. The object of the 1936 work was to begin a direct line of consecutive observations between these two strongly contrasted faunas. The reconnaissance was carried south to Cormorant lake within the drainage system and the water maze of the lower Saskatchewan river.

The first camp was made at Herchmer, mile 412 on the railway at the crossing of Owl river (Churchill being mile 510 north of The Pas), June 21 to July 2. The next was at Bird, mile 349, at the confluence of Limestone and Nelson rivers, July 3 to 17; then at Ilford, mile 286, in the neighbourhood of Split lake, July 18 to July 30. The party were at Thicket portage, mile 185, between Landing and Wintering lakes, August 1 to 31, and at Cormorant lake, mile 42, September 1 to 14.

Some interesting results were obtained, but as the work so outlined is as yet incomplete and as a special report on the complete project is anticipated, detailed results are deferred. Particularly satisfactory was the information relating to the comparative limitations of range of the thrushes. The Grey-cheeked thrush, *Hylocichla minima*, is the only thrush observed at Churchill at the edge of the timber. Its range extends south to Herchmer, north of which the hermit thrush, *Hylocichla guttata*, was not in evidence. The olive-backed thrush, *Hylocichla ustulata*, was not noted north of Thicket portage. The northern limit of Wilson's thrush, *Hylocichla fuscescens* is still uncertain. It was also found that there is little concentration of ducks north of Cormorant Lake district, and practically none at all north of Thicket portage, the few game ducks that breed at Churchill probably being an extension of coastal communities rather than the fading out of interior associations.

Besides the ornithological specimens obtained, listed elsewhere in this report, 66 mammal skins were secured and 125 mammal skulls, many of the latter being of fur bearers from trappers' cabins. Several wood frogs, *Rana cantabrigensis*, were obtained at Herchmer.

The division received a number of interesting additions to its collections from Museum parties engaged principally in other fields of zoology.

H. M. Laing and party who made a succession of investigations along the west main coast of British Columbia, from Jarvis inlet opposite Texada island to Kingcome inlet across from northern Vancouver island, furnished information on a hitherto unworked and rapidly changing coastal fauna where extensive lumbering is altering the whole face of the country.

Dr. D. A. MacLulich of the University of Toronto sent in a number of specimens from Thunder Bay district north of lake Superior.

Dr. C. H. D. Clarke, while engaged in a biological survey of Thelon Game Sanctuary, collected valuable material and information on the birds.

### Educational Work

A large number of inquiries, covering a wide range of ornithological subjects, were from private individuals, school teachers, Scout leaders, conservationists, or more or less advanced students of birds at home and abroad. A number of specimens have been received for identification purposes. Study material has been loaned to the following:

Museum of Zoology, University of Michigan, Ann Arbor, Mich.  
Museum of Ornithology, Cornell University, Ithaca, N.Y.



Royal Ontario Museum of Zoology, Toronto, Ont.  
 Provincial Museum, Victoria, B.C.  
 Field Museum, Chicago, Ill.  
 Bureau of the Biological Survey, Washington, D.C.  
 Allan Brooks, Okanagan Landing, B.C.  
 Various artists requiring models for their pictures.

A number of photographs were taken for the lantern-slide loan series, and moving pictures for educational reels.

### Exhibition Halls

A series of illuminated, conventionally pictorial windows has been installed in the Ornithological Hall and a system of individual case lighting developed that, when completely carried out, will produce a most satisfactory effect. The removal of several unrelated exhibits from the hall has allowed some of the systematic series to be placed in their proper relative positions. Considerable material has been collected to replace less satisfactory specimens, and for new life history groups.

### Accessions

Birds received and catalogued.. . . .	813
Sets birds' eggs .. . . .	69

About 2,000 cards have been added to the bibliographical and faunal indices and about 500 distribution maps have been brought up to date of January 1.

#### *By Gift*

- R. W. Tufts, Chief Federal Migratory Bird Officer for the Maritime Provinces, Wolfville, N.S., 15 redpolls, in the flesh.  
 Geo. Miksch Sutton, Cornell University, Ithaca, N.Y., 2 orange-crowned warbler skins from British Columbia.  
 R. McManus, jr., Memramcook, N.B., ruddy duck, in the flesh.  
 R. E. DeLury, Dominion Observatory, Ottawa, 4 birds, in the flesh.  
 V. E. Gould, Wolfville, N.S., 2 great horned owl skins.  
 G. Cook, Lorne, Que., pileated woodpecker, in the flesh.  
 Major W. M. Congreve, Llandyrnog, Denbigh, Great Britain, 2 skins of breeding solitary sandpipers from Labrador. These constitute the first definite breeding record for the species west of Hudson bay.  
 R. W. Smith, Wolfville, N.S., 4 birds in the flesh, Ottawa.  
 Geo. Cuthbertson, Thurso, Que., ruby-throated hummingbird, in the flesh.  
 A. Nelles, Ottawa, nighthawk, in the flesh.  
 J. S. Jenkins, Charlottetown, P.E.I., Canada goose, in the flesh.  
 E. Palen, Ottawa, cedar waxwing, in the flesh.  
 Harrison F. Lewis, Chief Migratory Bird Officer for Ontario and Quebec, desiccated whip-poor-will from near Harrington Harbour, Saguenay county, Que.  
 R. Meredith, Quebec, Que., yellow rail, in the flesh.  
 J. Skillen, Bureau of Geology and Topography, Ottawa, hooded merganser, in the flesh, and wing of snow goose taken near Kars, Ont.  
 Society for the Prevention of Cruelty to Animals, Ottawa, Wilson's snipe, in the flesh.  
 Royal Canadian Mounted Police, per R. H. Hamilton, Craig Harbour, Ellesmere island, Franklin, 2 rock ptarmigan.  
 Raymond Stone, Ottawa, great horned owl, in the flesh.  
 A. Gourley, Ottawa, common loon, in the flesh, Blue Sea lake, Que.  
 Allan Brooks, Okanagan Landing, B.C., 2 great horned owls from British Columbia and downy young of pectoral sandpiper and red phalarope from Alaska.

By Gift—Conc.

- R. W. Smith, Wolfville, N.S., 15 bird skins from Nova Scotia, including an interesting age series of the black guillemot.
- John Marshall, Ottawa, American merganser, in the flesh.
- R. W. Sheppard, Niagara Falls, Ont., American eider, Niagara Falls, the first record for the species in the province.
- E. F. G. White, Ottawa, ring-necked duck and broad-winged hawk, in the flesh.
- Northwest Territories Branch of the Department of the Interior, collected by F. L. Burwash on Arctic coast near Coronation gulf, 1925-26. Received some time ago but recently catalogued—13 salted skins.
- J. Adams, Ottawa, great horned owl, in the flesh.
- E. F. G. White, Ottawa, egg of snow goose from Arctic coast near Cambridge bay.
- Ray Salt, Rosebud, Alta., golden eagle, in the flesh.

By Museum Expedition

- P. A. Taverner, R. W. Smith, and T. E. Randall, on line of Hudson Bay railway, mile 412 to 42:
  - Bird skins... 484
  - Mounted birds (to accompany life-history group)... 2
  - Sets of eggs, mostly with nests... 50
  - Material for life-history groups... 3
  - Photographs... 50
  - Moving picture film... 500 feet
- H. M. Laing, Chas. Guiguet, and Geo. P. Holland, main coast of British Columbia at stations between Jarvis and Kingcome inlets... 155
- D. A. MacLulich, Thunder Bay district north of lake Superior:
  - Bird skins... 26
  - Sets of eggs... 2
- C. H. D. Clarke, Thelon district, Northwest Territories:
  - Bird skins... 31

By Museum Staff

- P. A. Taverner, 3 bronzed grackles, Ottawa.
- W. H. Collins, yellow-bellied sapsucker, Ottawa.
- D. Blakeley, 15 birds of various species, Ottawa.
- W. K. Bentley, Virginia rail, Ottawa.
- C. L. Johnson, oven-bird, Ottawa.

By Exchange

- R. W. Tufts, Wolfville, N.S., red-throated loon, Hudsonian curlew, 5 greater shearwaters in skins, and 8 white-winged gulls in flesh.

Publications

Reports and scientific papers published during the year are:  
Ducks vs. Ducks. By P. A. Taverner. Proceedings, North American Wild Life Conference, 1936.

Lectures

Making Use of the National Museum of Canada. By R. M. Anderson. Normal School, Ottawa, Ont., Sept. 21-25, 1936.  
Observations on the Migrations and Winter Habits of Willow and Rock Ptarmigan. By R. M. Anderson. Pilots, R.C.A.F., Ottawa, Ont., Oct. 21, 1936.  
Large Game Animals and Emergency Use of Small Game. By R. M. Anderson. Pilots, R.C.A.F., Ottawa, Ont., Feb. 18, 1937.

## PALÆONTOLOGICAL SECTION (Geological Survey)

E. M. Kindle, Chief of the Section, reports as follows upon the work of the year that falls within the scope of the Museum:

E. M. Kindle, assisted by V. J. Okulitch, studied a series of sections near the eastern and western limits of Gaspé peninsula, which included the oldest and the youngest (Cambrian and Middle Devonian) faunas of the areas investigated. From the standpoint of correlation the most interesting result was the discovery of a *Strophalosia* fauna in one of the western sections.

A. LaRoque made collections of fossils representing the typical marine facies of the Pleistocene fauna in the lower St. Lawrence River valley.

C. M. Sternberg spent the field season in Red Deer River valley, Alberta, placing permanent markers on the sites of dinosaur quarries and adding to the vertebrate collections from that region.

### Office and Laboratory Work

Work in the laboratory has included the preparation, by Mr. Sternberg and his assistants, of Oligocene mammal skulls from Cypress hills, Sask., generously donated by Mr. Fenley Hunter of Flushing, N.Y. The material comprises the results of a season's collecting by Mr. and Mrs. Hunter in 1936.

A dinosaur that will be sent the Calgary National History Society as an exchange specimen has been partly prepared. Considerable preparatory work has been done on three horned dinosaur skulls, a small duck-billed dinosaur, and on the new *Thescelosaurus* which is being described by Mr. Sternberg. A dinosaur model of *Thescelosaurus edmontia* on a scale of one-tenth was prepared by Mr. Lefebvre and Mr. Sternberg.

Arrangements have been made with the Los Angeles Museum for an exchange that will secure for this Museum a series of "Tar Pit" mammals from California.

Miss A. E. Wilson completed the Palæozoic section of the catalogue of type fossils. Study of Ordovician ostracods has been continued.

### Exhibits

A case of fossils completing the biological series of fossils was installed. An exhibit was prepared and installed at the Central Canada Exhibition in August, by A. LaRocque.

### Publications

Notes on Shallow Water Sand Structures. By E. M. Kindle. *Journal of Geology*, Oct.-Nov. 1936.

The Occurrence of Lake Bottom Manganiferous Deposits in Canadian Lakes. By E. M. Kindle. *Economic Geology*, Nov. 1936.

Memoir of Reginald Walter Brock. By E. M. Kindle. *Ann. Assoc. of American Geographers*, vol. 26, No. 4, 1936.

Classification of *Thescelosaurus* with a Description of a New Species. By C. M. Sternberg. *Abstracts of Palæontological Society*, Dec. 1936.

Oil and Gas Possibilities along Milk River, Southeastern Alberta. By L. S. Russell. *Dept. of Mines, Geological Survey Paper 36-12*, 1936.

New and Interesting Mammalian Fossils from Western Canada. By L. S. Russell. Trans. Roy. Soc. Canada, ser. 3, vol. 30, sec. 4, pp. 75-80, 1 pl. (1937).

Revision of the Geology of the Southern Alberta Plains. By L. S. Russell. Can. Inst. Min. and Met., Trans., vol. 40, pp. 185-196, 1 pl. (1937).

### Lectures

How the Earth Writes Its Autobiography. By E. M. Kindle. National Museum of Canada, June 10, 1936.

The Art of Observing. By E. M. Kindle. Unitarian Church, Mar. 15, 1937.

Revision of the Geology of the Southern Alberta Plains. By L. S. Russell. Annual Western Meeting, Can. Inst. Min. and Met., Edmonton, Oct. 2, 1936.

Life of the Range Land. By L. S. Russell. Elgin Street School Home and School Association, Jan. 20, 1937.

From Fish to Man. By L. S. Russell. National Museum, March 13 and 17, 1937.

A Plan for the Study of Canadian Mollusca. By A. LaRocque. Sixth Annual Meeting of the American Malacological Union, St. Petersburg, Fla., Apr. 22, 1936.

### MINERALOGICAL SECTION (Geological Survey)

Eugene Poitevin, Chief of the Section, reports as follows:

The increased mining and prospecting activity throughout the Dominion during the year was reflected by a greater demand from the public for mineralogical service. More specimens were received and reported on than ever before. On the other hand there was a slight falling off in the number of specimens issued for educational purposes.

Eugene Poitevin made two short trips to Toronto during July and August to discuss certain phases of his work on silicosis and asbestosis with Dr. Cunningham and Dr. C. M. Jephcott of the Ontario Health Department. A short trip was made to Quebec city to discuss asbestosis with Dr. Lessard of the Quebec Government Health Department, and one to the McIntyre Mines, Limited, at Timmins, for the purpose of furthering the work on silicosis.

J. R. Marshall spent two and a half months in Ontario and Quebec collecting the minerals and rocks necessary for the preparation of educational collections.

About 5,800 specimens were received, examined, and reported upon by Eugene Poitevin and H. V. Ellsworth. About 575 memoranda were furnished in connexion with these, and, in addition, numerous verbal reports were furnished to visitors seeking information regarding minerals and their commercial applications.

Eugene Poitevin continued his investigations of mineral residues obtained from human lungs. Normal lungs were studied in addition to those having mining and industrial exposure. This year he has studied 20 lungs, making a total of 75 lungs examined to date, on which preliminary reports have already been furnished to the Health Department at Toronto. In addition to this work a large suite of samples of mining dust from the McIntyre Mines has also been studied. During the latter part of this fiscal year Eugene Poitevin was engaged in the preparation of a mineralogical exhibit for the 1937 International Exposition in Paris.

H. V. Ellsworth made special studies of some recently discovered minerals.



R. J. C. Fabry, analyst, made chemical analyses of the following materials: rhyolite, Abitibi co., Que.; granite, Témiscamingue co., Que.; soda granite, Malartic tp., Que.; dyke rock, Malartic tp., Que.; syenite porphyry, Fournière tp., Que.; in connexion with work on silicosis, tube mill dust and dust from cleaner, McIntyre Mines, also dust from cleaner (vacuum) from Pullman cars; aplite, Thetford Mines, Que., for Asbestos Corporation, Thetford, Que.; knebellite (?) from H. P. H. group, Nahwatei lake, B.C.

During the fiscal year the following exhibits were prepared:

Special exhibit for Central Canada Exhibition, Ottawa, Ont.

" " Board of Trade, Prince Albert, Sask.

" " Department of Trade and Commerce, to be displayed at Cleveland, Ohio, U.S.A.

" " Canadian National Railways, to be displayed in New York.

" " Leeds Modern School, Leeds, England.

" " International Exposition at Paris.

### Educational Collections

The number of specimens issued was somewhat smaller than in the previous fiscal year, 1,073 collections, containing 38,280 specimens, were issued, and 12,670 specimens to prospectors.

The educational collections were distributed as follows:

Province	Standard	Grade 2	Grade 3	Grade 4	Miscel- laneous	Prospector's	
						Minerals	Rocks
Yukon.....	0	0	0	0	0	0	0
British Columbia.....	1	0	0	0	8	30	17
Alberta.....	0	0	0	0	1	14	3
Saskatchewan.....	0	0	0	0	4	15	10
Manitoba.....	0	0	1	0	7	6	5
Ontario.....	2	0	17	0	29	105	80
Quebec.....	0	0	25	600	11	38	25
Maritimes.....	0	0	0	0	0	5	5
Foreign.....	0	0	0	0	5	3	1
	3	0	43	600	65	216	146
No. of specimens.....	432	0	1,720	20,000	3,458	7,560	5,110

### Accessions

During the fiscal year the following specimens were received:

#### By Gift

Osakayama Noka, Minaminakayama-mura, imatate-gun, Fukui-ken, Japan: laumontite crystals.

Shimmatsu Ichikawa, Kitashinjo-mura, Imatate-gun, Fukui-ken, Japan: one quartz ball, diameter 6.5 cm.

Dr. E. M. Burwash, Dept. of Mines, Toronto, Ont.: covellite from Kozak mine, South Goudreau, Ont.

*By Gift—Conc.*

- Mr. Wm. Hosking, Manager, McWatters Gold Mines, Limited, Rouyn, Que.: gold ore.
- International Nickel Company, through A. J. Wadhams, Vice-President: nickel coins: six from various countries; three Chinese, 5, 10, and 20 Fen; one five-franc nickel coin bearing a portrait of King Leopold III, recently issued by the Belgian Government.
- Mr. John Knox, General Manager, Hollinger Mines, Limited, Timmins, Ont.: gold ore, rich, polished specimen.
- Mr. J. H. Stovel, General Manager, Dome Mines, Limited: two gold specimens; two specimens "Sigma ore" showing free gold.
- Mr. D. J. McCarthy, 58 Kendal avenue, Toronto, Ont.: two specimens native copper "found in rock cut about 15 feet below the surface, about 58 miles west of Sault Ste. Marie, Ont., on the section of the Trans-Canada Highway between Carp river and Mamaimse, about a mile west of Coppermine point."
- Dr. V. Dolmage, Vancouver, B.C.: nontronite (chloropal); three specimens from Nickel Plate mine (Hedley Mascot).
- Mr. G. H. Ballard, Smithers, B.C.: lead-zinc-copper ore from the Chimney group, 13½ miles down stream from Smithers, B.C.
- Mr. Clayton: 800 pounds of disseminated molybdenite ore and 1,000 pounds of mica schist, from Phoenix Molybdenite mine, Renfrew, Ont.
- Mr. H. Armstrong: 1,750 pounds corundum in feldspar from Burgess mine, New Carlow, Ont.
- Mr. P. MacDonald: 800 pounds microcline feldspar from MacDonald Feldspar mine, Monteagle tp., Ont.
- T. Morrisson, Bancroft, Ont.: 700 pounds sodalite.
- W. Robinson, Bancroft, Ont.: 1,700 pounds pyroxene in calcite. Henderson mine, Madoc, Ont.: 1,000 pounds granular talc.
- J. C. Dean, Cobalt, Ont.: 750 pounds niccolite.
- Black Donald Graphite mine: 1,000 pounds graphite ore.

















